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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: AOTA et al.

#5

Serial No.: 09/828,837

Filed: April 10, 2001

For: METHOD OF FORMING STRUCTURAL BODY USING
FRICTION STIR WELDING, AND STRUCTURAL BODY
FORMED

Group: 1725

Examiner: (Not Yet Assigned)

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INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97 AND 1.98Assistant Commissioner for Patents
Washington, D.C. 20231

June 6, 2001

Sir:

Pursuant to applicants' duty of disclosure, enclosed please find copies of documents cited in connection with related Japanese patent applications. Also enclosed is a Form, substantially equivalent to Form PTO-1449, listing the enclosed documents.

The documents were cited by the Japanese patent examiner in Office Actions in connection with these related Japanese applications.

These enclosed documents are being submitted prior to a first Office Action on the merits in the present application. Accordingly, requirements of 37 CFR 1.97(b) are satisfied.

In connection with the enclosed cited documents, note that also enclosed is U.S. Patent No. 5,388,529, which is based upon the same French Patent Application upon which the

enclosed JP No. 6-156272 is based.

Moreover, the following comments are provided in order to provide concise explanations in connection with the relevance of the enclosed documents. See 37 CFR 1.98(a)(3).

Japanese Patent Document No. 60-166177 relates to a welding method for welding together two members respectively of different metals. One member 11 is SUS 316 (the melting point of which is about 1500°C) and has a projection portion 14. Another member 12 is S20C (the melting point of which is about 1300°C), but does not have a projection portion. The space between the two members 11 and 12 is 50-150 μ m.

As described in No. 60-166177, when the two members 11 and 12 are welded using electron beam welding (EBW), the member 12 of S20C having the lower melting point is fused and next the member 11 of SUS316 having a higher melting point is fused. The one member 11 of SUS316 is united with the member 12 of S20C which has been fused already, and then an alloy is formed.

By using this technique with members respectively of different metals, as set forth in No. 60-166177, occurrence of stress for generating cracks in the space between the two members can be prevented.

As can be seen in the foregoing, No. 60-166177 does not relate to friction stir welding.

Japanese Patent Application Utility Model No. 51-111925 has been referred to by the Japanese patent examiner as a

reference document, and not as a document for rejection. This document relates to welding for powder metallurgy formation bodies. Previously, when the powder metallurgy formation bodies are welded, as shown in Fig. 1(b) in this patent document, the volume of the welding portion decreases, and then cracks occur easily. No. 51-111925 is directed to preventing occurrence of such cracks in powder metallurgy formation bodies.

As shown in Fig. 2(a) of No. 51-111925, projection portions 4, 4 are formed in advance on the powder metallurgy formation bodies 11 and 12. But as shown in Fig. 2(b), the projection portion 4 is provided in advance to the powder metallurgy formation body 12; however, to the "true density metal body" (that is, the body which is not formed by powder metallurgy), the projection is not provided.

As can be seen from the foregoing, No. 51-111925 does not relate to friction stir welding.

No. 6-156272 relates to a car body, which includes steel plates 6, 7, 8 and 9 and inside posts (frame members) 18 and 19. In this patent document, MIG (metal inert gas) welding is used for the three welding portions. Namely, MIG welding is carried out on (1) the welding of the posts 21 and the frame member 22, (2) the welding of the belt member 3 of the roof and the frame member 24, and (3) the welding of the post 18 and the beam member 2.

As can be seen in the foregoing, this patent document

refers to MIG welding, not friction stir welding.

No. 7-33016 relates to the manufacturing method of a car body. The car body is manufactured using MIG welding for the plural honeycomb panels, or using TIG welding.

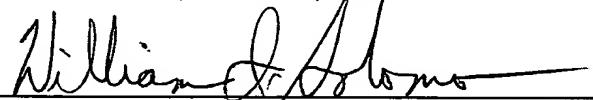
No. 7-33016 does not relate to friction stir welding.

In view of the foregoing, it is respectfully submitted that all applicable requirements of 37 CFR 1.197 and 1.98 are satisfied, in connection with present submission of the enclosed documents. Accordingly, entry of and consideration of the enclosed documents, in due course, upon examination of the present application, are respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (503.35933VV5), and please credit any excess fees to said deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



William I. Solomon
Registration No. 28,565

WIS/pc
(703) 312-6600